

(Translation)

Mailed: June 1, 2004

NOTIFICATION OF REASONS FOR REJECTION

Patent Application No.: 2001-552133

Examiner's Notice Date: May 24, 2004

Examiner: T. Kanetaka

This application is rejected on the grounds stated below. Any opinion about the rejection must be filed within THREE MONTHS of the mailing date hereof.

REASON

1. The application fails to satisfy the requirements under Section 36 (6)(i) of the Patent Law, on the grounds that the claim mentioned below is defective in the following respect.

REMARKS

In claim 13, which depends upon claim 2 reciting that the first optical transmission means is severed, it is recited that the first optical transmission means is secured to the optical processing means using the micro-substrate. However, in the Detailed Description of the Invention, it is not disclosed that the first optical transmission means is severed when the micro-substrate is used.

Therefore, the invention defined in claim 13 is not supported by the Detailed Description of the Invention.

REASON

2. The inventions recited in the following claims are unpatentable under Section 29 (2) of the Patent Law, as being such that the inventions could easily have been made by a person with ordinary skill in the art to which the inventions pertain, on the basis of the inventions described in

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the following publications distributed in Japan or a foreign country prior to this application or the invention made available to the public through electric telecommunication lines in Japan or a foreign country prior to this application.

REMARKSRe: Claims 1-7, 9-12, and 14

References 1 and 2 are applicable.

Reference 1 discloses a method of optically coupling an optical fiber and an exterior optical fiber by providing an aperture using a cutting tool in such a manner as to cut an optical fiber sandwiched between an insulating substrate and a covering plate (corresponding to the "first optical transmission means embedded within the composite"), polishing the surface of the optical fiber which has appeared after the cutting, and mounting, on the surface, the resin block having a total reflective surface. Reference 1 also discloses a method of optically coupling an optical fiber and an exterior optical fiber by reflection of light by the end surface of the optical fiber located between the insulating substrate and the covering plate. (In particular, refer to paragraph [0020] and FIGS. 10, 11 and 12.) Thus, there is no substantial structural differences between the inventions defined in claims 1, 2, 3, 10 and 14 and the invention described in Reference 12.

It was widely known to use means for making lights incident from the optical fiber into parallel lights, when optically coupling between optical fibers by use of reflective members. (For example, refer to FIG. 3 of Reference 2.)

In the method of optically coupling an optical fiber with an exterior optical fiber

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described in Reference 1, there seems to be no particular difficulty in applying the above-mentioned widely-known technique when optically coupling an optical fiber with an exterior optical fiber by means of reflection of light by the end surface of the optical fiber between the insulating substrate and the covering plate. To perform processing by use of a laser when forming an aperture is widely known similarly to the processing by use of a cutting tool. Furthermore, to provide a position marker or depth marker is a matter of choice for a person skilled in the art.

Therefore, the inventions defined in claims 1-7, 9-12, and 14 are easily conceivable for a person skilled in the art based on the cited references.

(The claims, which are not mentioned in this Official Action, are not rejected. If a new reason for rejection is noticed, a further Official Action will be issued.)

References Cited:

1. Jpn. Pat. Appln. KOKAI Publication No. 10-126018
2. Jpn. UM Appln. KOKAI Publication No. 59-101216

Prior Art Search Report

Searched Field: IPC 7<sup>th</sup> ed. G02B 6/26;6/30-6/34;6/42

DB Name: WPI

Prior-Art Document:

\* PCT International Publication No. 98/30925

The document does not constitute the reason for rejection.

## Partial Translation of Reference 1

Jpn. Pat. Appln. KOKAI Publication No. 10-126018

Filing No.: 8-274700

Filing Date: October 17, 1996

Applicant: ADVANTEST CORPORATION

Priority: Not Claimed

KOKAI Date: May 15, 1998

Request for Examination: Not filed

Int.Cl.: H05K 1/02

H05K 3/10

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A. Page 4, left column, line 34, to right column, line 9:

[0019] FIG. 9 shows a design variation of plate surface coupling section 26. This example shows a case where a cylindrical condensing lens 26A is provided in the position of the axis core of an optical fiber OPF2. By providing the condensing lens 26A in this manner, an advantage such that the connection between optical fibers OPF1 and OPF2 can be strengthened, improving the transmission efficiency, is obtained. FIG. 10 shows another method of manufacturing the plate surface coupling section 26. In this example, an optical fiber OPF is mounted on an adhesive layer 23, then a stuffing agent layer 25A is coated thereon and harden, and a notch 26B is formed by a cutting tool in a state where a covering plate 24 is covered and adhered on the harden stuffing agent layer 25A. The notch 26B is selected such that the end portion of the optical fiber OPF becomes a vertical plane and the cutoff surface of the optical fiber cut off opposed to this vertical plane forms an angle of 45°. By plating metal on the inclined plane S1 by selective plating method or the like, as necessary, a reflective surface with fine reflective efficiency can be obtained.

[0020] Therefore, using this inclined plane S1 which is inclined at an angle of 45°, an optical fiber OPF and a light in a direction perpendicular to the optical fiber OPF are connected, and the light can be input into and incident from the optical fiber OPF.

FIGS. 11 and 12 illustrate a method of manufacturing a plate surface coupling section 26 having a different structure. In this example, after the covering plate 24 covers the staffing agent layer 25A, an aperture 24A (actually a groove) is formed. When forming the aperture 24A, an optical fiber OPF is vertically cut off, and the surface appeared by the cutting is polished. After that, as shown in FIG. 12, a resin block 26C having a total reflective surface 26A, which forms an angle of  $45^\circ$ , is mounted on the apertures 24A and 25B, and the reflective surface 26D connects different optical fibers OPFs.

Partial Translation of Reference 2

Jpn. UM Appln. KOKAI Publication No. 59-101216

Filing No.: 57-195672

Filing Date: December 27, 1982

Applicant: Hitachi, Ltd.

Priority: Not Claimed

KOKAI Date: July 7, 1984

Request for Examination: Not filed

Int.Cl.<sup>3</sup>: G 02 B 27/14

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What is claimed is:

An optical substrate comprising an optical transmission member provided inside a plate member and an electric pattern wiring provided outside the plate member, respectively, wherein the substrate further comprises:

optical connection means for joining an optical signal which carries the optical transmission member of the substrate to an optical transmission member from outside, the optical connection means being provided on the substrate in such a manner that a condensing lens in contact with an end face of each of the light transmission members and reflective elements are combined.